

current in electrolytic plating, the amount of a current is increased to increase a deposition rate, whereby a thick film made of the first conductive material can be grown in a short period of time. Similarly, after thin films made of the second and third conductive materials are first grown on the surfaces of the second and third base films by electroless plating, the second and third conductive materials are deposited by electrolytic plating on the surfaces of the respective thin films. As a result, the thick films of the second and third conductive materials can be grown on the surfaces of the second and third base films in a short period of time.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a first cross section illustrating a method of manufacturing a single-layered flexible wiring board according to one embodiment of the present invention;

Fig. 2 is a second cross section illustrating the method of manufacturing the single-layered flexible wiring board according to one embodiment of the present invention;

Fig. 3 is a third cross section illustrating the method of manufacturing the single-layered flexible wiring board according to one embodiment of the present invention;

Fig. 4 is a fourth cross section illustrating the method of manufacturing the single-layered flexible wiring board according to one embodiment of the present invention;

Fig. 5 is a fifth cross section illustrating the method of manufacturing the single-layered flexible wiring board according to one embodiment of the present invention;

Fig. 6 is a sixth cross section illustrating the method of manufacturing the single-layered flexible wiring board according to one embodiment of the present invention;

Fig. 7 is a seventh cross section illustrating the method of manufacturing the single-layered flexible wiring board

according to one embodiment of the present invention;

Fig. 8 is an eighth cross section illustrating the method of manufacturing the single-layered flexible wiring board according to one embodiment of the present invention;

5 Fig. 9 is a ninth cross section illustrating the method of manufacturing the single-layered flexible wiring board according to one embodiment of the present invention;

Fig. 10 is a tenth cross section illustrating the method of manufacturing the single-layered flexible wiring board according to one embodiment of the present invention;

10 Fig. 11 is an eleventh cross section illustrating the method of manufacturing the single-layered flexible wiring board according to one embodiment of the present invention;

Fig. 12 is a twelfth cross section illustrating the method of manufacturing the single-layered flexible wiring board according to one embodiment of the present invention;

15 Fig. 13 is a thirteenth cross section illustrating the method of manufacturing the single-layered flexible wiring board according to one embodiment of the present invention;

20 Fig. 14 is a fourteenth cross section illustrating the method of manufacturing the single-layered flexible wiring board according to one embodiment of the present invention;

Fig. 15 is a fifteenth cross section illustrating the method of manufacturing the single-layered flexible wiring board according to one embodiment of the present invention;

25 Fig. 16A is a cross section for illustrating a structure including a first electroless plating layer on a surface of a first surface conductive layer in the single-layered flexible wiring board according to one embodiment of the present invention, and Fig. 16B is a cross section for illustrating a structure including the first electroless plating layer and a first conductive material sequentially deposited on the surface of the first surface conductive layer in the single-layered

flexible wiring board according to one embodiment of the present invention;

Fig. 17 is a first cross section for illustrating a method of manufacturing a double-layered flexible wiring board according to one embodiment of the present invention;

Fig. 18 is a second cross section for illustrating the method of manufacturing the double-layered flexible wiring board according to one embodiment of the present invention;

Fig. 19 is a third cross section for illustrating the method of manufacturing the double-layered flexible wiring board according to one embodiment of the present invention;

Fig. 20 is a fourth cross section for illustrating the method of manufacturing the double-layered flexible wiring board according to one embodiment of the present invention;

Fig. 21 is a fifth cross section for illustrating the method of manufacturing the double-layered flexible wiring board according to one embodiment of the present invention;

Fig. 22 is a sixth cross section for illustrating the method of manufacturing the double-layered flexible wiring board according to one embodiment of the present invention;

Fig. 23 is a seventh cross section for illustrating the method of manufacturing the double-layered flexible wiring board according to one embodiment of the present invention;

Fig. 24 is an eighth cross section for illustrating the method of manufacturing the double-layered flexible wiring board according to one embodiment of the present invention;

Fig. 25 is a ninth cross section for illustrating the method of manufacturing the double-layered flexible wiring board according to one embodiment of the present invention;

Fig. 26A is a tenth cross section for illustrating the method of manufacturing the double-layered flexible wiring board according to one embodiment of the present invention, and Fig. 26B an eleventh cross section for illustrating the method

of manufacturing the double-layered flexible wiring board according to one embodiment of the present invention;

Fig. 27 is a twelfth cross section for illustrating the method of manufacturing the double-layered flexible wiring

5 board according to one embodiment of the present invention;

Fig. 28 is a thirteenth cross section for illustrating the method of manufacturing the double-layered flexible wiring board according to one embodiment of the present invention;

Fig. 29 is a first cross section for illustrating a method of manufacturing a multi-layered flexible wiring board according to another embodiment of the present invention;

Fig. 30 is a second cross section for illustrating the method of manufacturing the multi-layered flexible wiring board according to another embodiment of the present invention;

15 Fig. 31 is a third cross section for illustrating the method of manufacturing the multi-layered flexible wiring board according to another embodiment of the present invention;

Fig. 32 is a fourth cross section for illustrating the method of manufacturing the multi-layered flexible wiring board according to another embodiment of the present invention;

20 Fig. 33 is a fifth cross section for illustrating the method of manufacturing the multi-layered flexible wiring board according to another embodiment of the present invention;

Fig. 34 is a cross section for illustrating a method of manufacturing a multi-layered flexible wiring board according to a further embodiment of the present invention;

Fig. 35 is a first cross section for illustrating a method of manufacturing a flexible wiring board according to a further embodiment of the present invention;

30 Fig. 36 is a second cross section for illustrating the method of manufacturing the flexible wiring board according to the further embodiment of the present invention;

Fig. 37 is a third cross section for illustrating the

method of manufacturing the flexible wiring board according to the further embodiment of the present invention;

Fig. 38 is a fourth cross section for illustrating the method of manufacturing the flexible wiring board according to the further embodiment of the present invention;

Fig. 39 is a fifth cross section for illustrating the method of manufacturing the flexible wiring board according to the further embodiment of the present invention;

Fig. 40 is a sixth cross section for illustrating the method of manufacturing the flexible wiring board according to the further embodiment of the present invention;

Fig. 41 is a seventh cross section for illustrating the method of manufacturing the flexible wiring board according to the further embodiment of the present invention;

Fig. 42 is an eighth cross section for illustrating the method of manufacturing the flexible wiring board according to the further embodiment of the present invention;

Fig. 43 is a ninth cross section for illustrating the method of manufacturing the flexible wiring board according to the further embodiment of the present invention;

Fig. 44 is a tenth cross section for illustrating the method of manufacturing the flexible wiring board according to the further embodiment of the present invention;

Fig. 45 is an eleventh cross section for illustrating the method of manufacturing the flexible wiring board according to the further embodiment of the present invention;

Fig. 46 is a twelfth cross section for illustrating the method of manufacturing the flexible wiring board according to the further embodiment of the present invention;

Fig. 47 is a thirteenth cross section for illustrating the method of manufacturing the flexible wiring board according to the further embodiment of the present invention;

Fig. 48 is a fourteenth cross section for illustrating

the method of manufacturing the flexible wiring board according to the further embodiment of the present invention;

Fig. 49 is a fifteenth cross section for illustrating the method of manufacturing the flexible wiring board according to the further embodiment of the present invention;

Fig. 50A is a sixteenth cross section for illustrating the method of manufacturing the flexible wiring board according to the further embodiment of the present invention, and Fig. 50B is a seventeenth cross section for illustrating the method of manufacturing the flexible wiring board according to the further embodiment of the present invention;

Fig. 51 is an eighteenth cross section for illustrating the method of manufacturing the flexible wiring board according to the further embodiment of the present invention;

Fig. 52 is a nineteenth cross section for illustrating the method of manufacturing the flexible wiring board according to the further embodiment of the present invention;

Fig. 53 is a twentieth cross section for illustrating the method of manufacturing the flexible wiring board according to the further embodiment of the present invention;

Fig. 54 is a twenty-first cross section for illustrating the method of manufacturing the flexible wiring board according to the further embodiment of the present invention;

Fig. 55 is a twenty-second cross section for illustrating the method of manufacturing the flexible wiring board according to the further embodiment of the present invention;

Fig. 56 is a twenty-third cross section for illustrating the method of manufacturing the flexible wiring board according to the further embodiment of the present invention;

Fig. 57 is a twenty-fourth cross section for illustrating the method of manufacturing the flexible wiring board according to the further embodiment of the present invention;

Fig. 58 is a twenty-fifth cross section for illustrating

the method of manufacturing the flexible wiring board according to the further embodiment of the present invention;

Fig. 59 is a twenty-sixth cross section for illustrating the method of manufacturing the flexible wiring board according to the further embodiment of the present invention;

Fig. 60 is a twenty-seventh cross section for illustrating the method of manufacturing the flexible wiring board according to the further embodiment of the present invention;

Fig. 61 is a twenty-eighth cross section for illustrating the method of manufacturing the flexible wiring board according to the further embodiment of the present invention;

Fig. 62 is a twenty-ninth cross section for illustrating the method of manufacturing the flexible wiring board according to the further embodiment of the present invention;

Fig. 63 is a thirtieth cross section for illustrating the method of manufacturing the flexible wiring board according to the further embodiment of the present invention;

Fig. 64A is a thirty-first cross section for illustrating the method of manufacturing the flexible wiring board according to the further embodiment of the present invention, and Fig. 64B is a thirty-second cross section for illustrating the method of manufacturing the flexible wiring board according to the further embodiment of the present invention;

Fig. 65 is a thirty-third cross section for illustrating the method of manufacturing the flexible wiring board according to the further embodiment of the present invention;

Fig. 66 is a first view for illustrating a conventional method of manufacturing a flexible wiring board;

Fig. 67 is a second view for illustrating the conventional method of manufacturing the flexible wiring board;

Fig. 68 is a third view for illustrating the conventional method of manufacturing the flexible wiring board;

Fig. 69 is a fourth view for illustrating the conventional method of manufacturing the flexible wiring board;

Fig. 70 is a fifth view for illustrating the conventional method of manufacturing the flexible wiring board;

5 Fig. 71 is a sixth view for illustrating the conventional method of manufacturing the flexible wiring board;

Fig. 72 is a seventh view for illustrating the conventional method of manufacturing the flexible wiring board;

10 Fig. 73 is an eighth view for illustrating the conventional method of manufacturing the flexible wiring board;

Fig. 74 is a ninth view for illustrating the conventional method of manufacturing the flexible wiring board; and

Fig. 75 is a tenth view for illustrating the conventional method of manufacturing the flexible wiring board.

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BRIEF DESCRIPTION OF REFERENCE NUMERAL

In each of the accompanying drawings, the following components are commonly denoted by the reference numerals as follows: Reference numerals 1, 2 denote flexible wiring boards; 20 11 denotes a first base film; 12 denotes a reference conductive layer; 13 denotes a first surface conductive layer; 15 denotes a first via hole; 16 denotes a first conductive material; 18 denotes a first electroless plating layer; 74 denotes a first surface-side conductive material; 20 denotes a first wiring layer; 21 denotes a reference wiring layer; 51 denotes a second 25 base film; 53 denotes a second surface conductive layer; 55 denotes a second via hole; 76 denotes a second bottom-side conductive material; 70 denotes a second wiring layer; 91 denotes a first coating conductive layer; 92 denotes a first 30 conductive layer; 93 denotes a second coating conductive layer; and 94 denotes a second conductive layer.